What is claimed is:

1. A method of designing seat assemblies for meeting a desired objective using a prototype seat assembly, a test dummy, and simulation software, said method comprising the steps of:

building a basic model of the prototype seat assembly surface using the simulation software;

identifying a plurality of seat parameters for designing the seat assembly;

determining which seat parameters are most significant to meeting the desired objective by running simulations on the basic model;

building a detailed model of the seat assembly using simulation software for a more accurate representation of the seat assembly;

determining which of the seat parameters are most significant to meeting the desired objective by running simulations on the detailed model;

optimizing the most significant parameters to best meet the desired objective; and

modifying the prototype seat assembly according to the results of optimizing the most significant parameters.

2. A method as set forth in claim 1, wherein the step of determining which seat parameters of the basic model are most significant to meeting the desired objective by running simulations on the basic model further includes the steps of:

identifying the seat parameters with the potential to influence the test dummy in rear impacts;

determining the optimization range for each of the identified seat parameters;

optimizing each of the identified seat parameters separately;

determining the overall significance of each of the identified seat parameters;

disregarding the identified seat parameters having little or no significance in meeting the desired objective; and

determining ideal ranges for each of the significant seat parameters when combined with the other significant seat parameters.

3. A method as set forth in claim 2, wherein the step of determining which of the seat parameters are most significant to meeting the desired objective by running simulations on the detailed model further includes the steps of:

identifying the seat parameters previously determined to be significant to the rear impact performance of the basic model of the seat assembly;

optimizing each of the seat parameters separately by running simulations on the detailed build;

determining the overall significance of each of the seat parameters; and

disregarding any seat parameters having little or no significance in meeting the desired objective.

4. A method as set forth in claim 3, wherein the step of optimizing the most significant parameters to best meet the desired objective further includes the steps of:

identifying the seat parameters previously determined to be most significant to meeting the desired objective;

running simulations on the detailed model with various combinations of the most significant seat parameters to determine the best combinations and ranges of those seat parameters; and

choosing one best combination for meeting the desired objective of the seat assembly.

5. A method as set forth in claim 4, further including the step of running a sled test on the provided prototype seat assembly with the provided test dummy to obtain the data necessary to create an accurate model of the seat assembly using the simulation software.

6. A method as set forth in claim 5, further including the step of running component level tests on the prototype seat assembly to provide the data required as input properties to build a model of the seat assembly using the simulation software.

7. A method as set forth in claim 6, further including the step of validating the basic model with the sled test data to ensure accurate modeling of the prototype seat assembly.

8. A method as set forth in claim 7, further including the step of validating the detailed model with the sled test data to ensure accurate modeling of the prototype seat assembly.

9. A method as set forth in claim 8, further including the step of running a final sled test on the modified prototype seat assembly with the test dummy to obtain the data necessary to show advancement towards the desired objective.

10. A method of designing seat assemblies to improve rear impact performance using a prototype seat assembly, a test dummy, and simulation software, said method comprising the steps of:

running a sled test on the provided prototype seat assembly with the provided test dummy to obtain the data necessary to create an accurate model of the seat assembly using the simulation software;

building a basic model of the prototype seat assembly surface using the simulation software;

validating the basic model with the sled test data to ensure accurate modeling of the prototype seat assembly;

identifying a plurality of seat parameters for designing the seat assembly;

determining which seat parameters of the basic model are most significant to meeting the desired objective by running simulations on the basic model;

building a detailed model of the seat assembly using the simulation software for a more accurate representation of the seat assembly;

validating the detailed model with the sled test data to ensure accurate modeling of the prototype seat assembly;

determining which of the seat parameters are most significant to meeting the desired objective by running simulations on the detailed model;

optimizing the most significant parameters to best improve rear impact performance;

modifying the prototype seat assembly according to the results of optimizing the most significant parameters; and

running a final sled test on the modified prototype seat assembly with the test dummy to obtain the data necessary to show advancement towards improving rear impact performance.

11. A method as set forth in claim 10, further including the step of running component level tests on the prototype seat assembly to provide the data required as input properties to build a model of the seat assembly using the simulation software.

12. A method as set forth in claim 11, wherein the step of building a basic model of the seat assembly surface on the simulation software further includes the steps of:

modeling the seat geometry;

determining the joint properties;

modeling the foam and suspension stiffness;

positioning the test dummy into the modeled seat assembly; and

validating the contact points between the test dummy and the modeled seat assembly.

13. A method as set forth in claim 12, wherein the step of determining which seat parameters of the basic model are most significant to meeting the desired objective further includes the steps of:

identifying the seat parameters with the potential to influence the test dummy in rear impacts;

determining the optimization range for each of the identified seat parameters;

optimizing each of the identified seat parameters separately;

determining the overall significance of each of the identified seat parameters;

disregarding the identified seat parameters having little or no significance on the rear impact performance of the basic model; and

determining ideal ranges for each of the significant seat parameters when combined with the other significant seat parameters.

14. A method as set forth in claim 13, wherein the step of building a detailed model of the seat assembly on the simulation software further includes the steps of:

modeling the seat geometry;

determining the material properties for the seat structure components;

positioning the test dummy according to sled test data; and

validating the contact points between the test dummy and the modeled seat assembly.

15. A method as set forth in claim 14, wherein the step of determining which of the seat parameters of the detailed model are most significant to meeting the desired objective further includes the steps of:

identifying the seat parameters previously determined to be significant to the rear impact performance of the basic model of the seat assembly;

optimizing each of the seat parameters separately by running simulations on the detailed build;

determining the overall significance of each of the seat parameters; and

disregarding any seat parameters having little or no significance in influencing the test dummy in a simulated rear impact on the detailed model.

16. A method as set forth in claim 15, wherein the step of optimizing the most significant parameters to best improve rear impact performance further includes the steps of:

identifying the seat parameters previously determined to be most significant to the rear impact performance of the detailed model;

running simulations on the detailed model with various combinations of the most significant seat parameters to determine the best combinations and ranges of those seat parameters; and

choosing one best combination for improving the rear impact performance of the seat assembly.